

Techniques for Processing Integer Cosine Transform Images From Galileo

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The inception of Galileo's low-gain antenna mission, brought about by the unsuccessful attempt to open the spacecraft's high-gain antenna, required the need to maximize the amount of data returned from Galileo for the Solid State Imaging (SSI) Camera. New flight software was uploaded to the spacecraft containing the Integer Cosine Transform (ICT) data compression algorithm. ICT compression allows the number of bits per each image to be reduced significantly. With the lower data rates of the low-gain antenna, the reduction in bits allows more images to be returned. In addition to the on-board software changes, new ground-based image processing software was developed by JPL's Multimission Image Processing System (MIPS) which provides the capability to reconstruct the compressed images and reduce the artifacts introduced by the compression algorithm. The focus of the poster will be to explore the challenges and solutions for handling ICT compressed image data. Covered will be the decompression of telemetry data, cosmetic correction of compression artifacts in the data and mosaicking images that have been through the decompression processes.